



SPECIAL GUIDELINES FOR ELECTRICAL INSTALLATION

*** Contact and Fax Telephone Numbers – See Page 3 ***



CITY OF BRENTWOOD

PLANNING AND CODES DEPARTMENT

BRENTWOOD, TENNESSEE

Effective Date - February 8, 2017

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Special Guidelines for Electrical Installation

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The State Electrical Staff offices are located within the City of Brentwood-Planning and Codes Department. Office and mailing addresses are: 5211 Maryland Way - P.O. Box 788 - Brentwood, TN 37024-0788

Overview

Brentwood is in the unique position of being served electrically by two separate power suppliers; Nashville Electric Service (NES) and Middle Tennessee Electric Membership Corporation (MTEMC). The purpose of this pamphlet is to acquaint you and your subcontractors as to requirements for these two power suppliers and what is expected by the City of Brentwood pertaining to electrical inspections, maintenance of temporary services, and other guidelines.

We would like to advise you at this time that this pamphlet may have amendments to it and it will be your responsibility to keep abreast of changes as they occur. Brentwood is receptive to any comments or constructive ideas regarding changes or additions to electrical codes.

Pursuant to authority granted by T.C.A. § 6-54-502, and for the purpose of providing practical minimum standards for the safeguarding of persons and of buildings and their contents from hazards arising from the use of electricity for light, heat, power, radio, signaling, or for other purposes, the National Electrical Code, 2008 edition, as prepared by the National Fire Protection Association (NFPA), is hereby adopted and incorporated by reference as a part of this Code and is hereinafter referred to as the electrical code; provided further that the electrical code shall incorporate all modifications employed by the Office of the State Fire Marshal, Department of Commerce and Insurance, State of Tennessee and the "Special Guidelines for Electrical Installation" of the City of Brentwood. The 2008 National Electrical Code, as adopted, and including all modifications referred to in this section, supersedes any conflicting provisions concerning electrical standards that may be contained within other adopted building codes.

State Electrical Inspections & Permits

Electrical services cannot be provided to the customer until an approved electrical inspection is made. Electrical power suppliers require a rough-in and final inspection. After obtaining a permit, it is the responsibility of the permit holder to request an inspection. Inspections are not required on minor repair work such as replacement devices to suitable receptacles which have been permanently installed or the addition of one phone line. **IMPORTANT NOTE: An electrical inspection is not automatically requested when obtaining a permit; permit holder shall call and request the follow-up inspection.**

A copy of the Electrical Installation Requirements from the State of Tennessee/Department of Commerce and Insurance can be obtained at: <http://www.tennessee.gov/sos/rules/0780/0780-02/0780-02.htm>

Permits

STATE OF TENNESSEE FIRE MARSHAL'S OFFICE-ELECTRICAL PERMITS

TENNESSEE CODE ANNOTATED 68-102-143

(B)(1) Deputy electrical inspectors appointed by the commissioner, or by the city official designated by the commissioner to make appointments in cities or municipalities authorized by the commissioner to conduct electrical inspections, are authorized to inspect electrical installations upon receipt of a request from the owner of the property, a licensed electrical contractor, or from any person, association, or corporation supplying electrical energy to the installations, or from municipal governing bodies, or from the county legislative body of the county in which the installations are located. Each inspector, acting through the inspector's professional corporation, is authorized to charge for and receive a fee for each inspection.

TENNESSEE CODE ANNOTATED 68-102-150

Every person, firm or corporation, or legal entity engaged in the business of installation of electrical wiring, heating, or any electrical devices that require inspection by this chapter and regulations adopted pursuant to this chapter shall register with the division of fire prevention, and shall pay a fee of twenty-five dollars (\$25.00)

Note: Any person may perform electrical work (for which an electrical inspection is required) upon his own residence provided he first applies for and obtains a property owner's electrical permit. This permit shall extend to the applicant and members of his immediate family only: and shall not authorize assistance by any other person not duly registered in accordance with TCA-Section 102-150

Note: Every permit for electrical services not exceeding 225-ampere capacity shall expire two (2) years from the date of issue, unless the inspector determines that substantial progress has been made in the work authorized by the permit. No electrical work for which a permit is required shall be commenced in any building or premises until a permit to do such work is obtained.

CITY OF BRENTWOOD

Other Required Inspections in the City of Brentwood:

1. New Services or changes in services to existing installations;
2. Additions and/or change-outs to existing HVAC installations; (If an electrical inspection is required to be completed by the State of Tennessee Deputy Electrical Inspector)
3. Conductors or raceway installed on the interior of structure, the exterior of structure or below grade; (Prior to concealment)
4. Modular office additions or relocation of cubicles (If an electrical inspection is required to be completed by the State of Tennessee Deputy Electrical Inspector)
5. Grinder pump control boxes and conductors underground (Prior to concealment)
6. Low Voltage Installations (If an electrical inspection is required to be completed by the State of Tennessee Deputy Electrical Inspector)

Temporary Service (including Tents and Special Events)

1. Meter base shall not be higher than six (6) feet of grade.
2. Pole base shall be structurally sound and unable to push or pull over by hand.
3. Triplex shall be attached at the weather head and a length long enough to touch the ground left attached so that either power supplier does not have to leave the ground to make their attachment.
4. All dead covers on T/S will stay intact while T/S is energized. No splicing will be allowed outside of the disconnect.
5. T/S shall be terminated and a re-inspection of electrical installation will be required for any T/S found in a hazardous condition.
6. Extension cords shall not be located in a pedestrian walkway for tents and special events.
7. All 110- volt outlet and lighting shall be GFCI.

Emergency Situations

1. **Power suppliers** “may” energize services under emergency conditions resulting from windstorm, earthquakes or other catastrophic occurrences.
2. **Emergency repairs:** Where equipment replacements and repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day.
3. **Occupied buildings requiring change-out services:** Electrician shall contact the Power Company for a date and time for cut-out and will give the electrical inspector 24 hours notice of the time the inspector should arrive to have power restored.
4. **Lightning Strikes to Structures:** Structures sustaining lightning strikes require an Electrical Engineer to certify the safety of existing wiring installed or a MEGG report/testing to UL standards shall be completed on all circuits within the structure; owner of company to certify the test results.

Barns & Outbuildings

1. All lighting fixtures in barns and other outbuildings shall be of the non-conductor type directly fastened to the outlet box. Drop lights shall not be installed in barns or other buildings, unless specifically approved for the purpose used. All convenience receptacles in outbuildings shall be at least three (3) feet above floor level. Wiring in hay lofts shall be installed in conduit or otherwise protected against mechanical injury.

Swimming Pools

1. Conductors serving swimming pools which originate at a dwelling unit service equipment or sub-panel located on the interior of the dwelling unit may be installed utilizing the appropriate wiring methods contained in Chapter 3 of the adopted National Electrical Code. The wiring method shall comply with Article 680, adopted National Electrical Code regarding that portion of the installation on the exterior of the dwelling unit.
2. The State Electrical Inspector will not complete the bonding inspection until the City of Brentwood has approved the permanent or temporary barricade/enclosure. Consult with the area Building Inspector when special conditions exist.

Solar Equipment Installations

Contact the City of Brentwood Planning & Codes Department regarding additional documentation that may be required when installing solar equipment. (Dead loads added to structure, equipment capable of withstanding 90 mile wind speeds, etc.) If the equipment location is proposed in yard, the equipment shall be located within the building envelope.

For residential zoned districts, property owners should consult with their Homeowner's Association on bylaws regarding solar system installations. Solar system installations on commercial structures or properties shall be approved by the planning department and/or planning commission.

Meter Location

Statutory Authority: TCA Sections 68-17-113 and 68-17-150. 0780-2-1.08

1. The meter base shall be located not less than (5) feet and not more than six (6) feet above grade.
2. In all installations, the power supplier shall be contacted to determine the physical location of the meter base.
3. For multi-occupancy structures, metering equipment shall be identified to indicate the suite or address served by a permanently attached method.

Workspace Required For Electrical Equipment

Statutory Authority: TCA Sections 68-17-113 and 68-17-150. 0780-2-1.13 Workspace- Electrical Equipment

1. Where equipment requires examination, adjustment, renewal, or repair, adequate working space shall be provided and maintained. This work space shall not be less than thirty (30) inches in width and head room shall not be less than four (4) feet six (6) inches. Doorways providing access to equipment shall not be less than twenty-four (24) inches wide and three (3) feet six (6) inches high. There shall also be a clearance of three (3) feet in front of the equipment.
2. There shall be a vertical clearance of at least three (3) feet for use by those conducting necessary examination, adjustment, renewal, or repair of equipment located in accessible attics. In addition, there shall be a walkway running from the attic opening to the unit, with no obstruction (such as ducts used for the purpose of circulating air, etc.)
3. Adequate space shall be provided for removal of all electrical and heating/cooling equipment from all locations (including under houses and in attics), should a breakdown requiring replacement or major repair of equipment occur.

MTEMC-Requirements

Website: <http://mtemc.com/>

In addition to the National Electric Code, MTEMC has local electrical installation requirements:

1. Grounding – Minimum No. 4 copper ground wire shall be run unspliced from neutral conductor at service head or meter base to driven ground rod.

2. Entrance -
 - a) Place weather-head at point marked by MTEMC but not less than twelve (12) feet nor more than thirty (30) feet above ground (see article 230-24 of National Electrical Codes) and within eighteen (18) inches of point of service attachment.
 - b) Install eye bolt for MTEMC Service.
 - c) Use service mast on low buildings.
 - d) Two- and one-half (2 ½) inch galvanized conduit is the minimum mast size and shall be fastened with two clamps bolted through the wall.
 - e) IMC is not acceptable as service entrance conduit.
3. Underground Services – Installation specifications are available when meter base is picked up.
4. Clearance - There shall be a minimum of eighteen (18) feet clearance on commercial and industrial accounts. All other clearances shall comply with National Electric Code regulations.
5. Temporary Service - See attached drawings at MTEMC website.
6. Middle Tennessee will energize service releases for 225- amp and above on residential buildings.

NES Requirements

Website: <http://nespower.com>

1. NES allows service releases when service is made up and there are two (2) branch circuits that are completed and labeled as to their location. (225- amp and above)
2. Underground Services - On the left hand side (left bottom) of meter base, there will be no exit or entry of conduit.
3. Temporary Services
 - a) See MTE-TS drawing minus pig tails and #4 grounds, #6 will do.
 - b) NES requires a 220- volt GFIC receptacle along with the 110- volt ground fault receptacle.

Residential Requirements

1. All lots shall be marked by lot number visible fifty (50) feet from the street.
2. Finished roof shall be on structure, prior to rough-in inspection.
3. A forty-five (45) day time limit will be given with all service releases. Special authorization for extensions will be given if the inspector or authority is notified.
4. No electrical inspection will be conducted, if the premises are occupied or not energized for final inspection.
5. A final electrical and rough-in shall be completed and approved prior to the City of Brentwood inspections.
6. Kitchens - Small appliance circuits shall have only two receptacles outlets at countertop level per circuit. This circuit may feed other receptacles not at counter level.
7. Separate 20- amp circuits shall be required for trash compactors, dishwashers, garbage disposals, microwaves, instant hot water, or any other stationary appliance using 12- amps or more.
8. In attic or crawl spaces where any mechanical or electrical equipment are present, a light shall be installed where it shall illuminate each piece of equipment and a receptacle shall be located within ten (10) feet of one piece of equipment. In attics this receptacle shall be within one (1) foot of walkway.

9. **SMOKE ALARMS SECTION R314.** 2012 edition, International Residential Code

R314.1 Smoke detection and notification.

All smoke alarms shall be listed and labeled in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning *equipment* provisions of NFPA 72.

R314.2 Smoke detection systems.

Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms. Where a household fire warning system is installed using a combination of smoke detector and audible notification device(s), it shall become a permanent fixture of the occupancy and owned by the homeowner. The system shall be monitored by an approved supervising station and be maintained in accordance with NFPA 72.

Exception: Where smoke alarms are provided meeting the requirements of Section R314.4.

R314.3 Location.

Smoke alarms shall be installed in the following locations:

1. In each sleeping room.
2. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements, **garages, cellars* and habitable attics, but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

R314.3.1 Alterations, repairs and additions.

When *alterations*, repairs or *additions* requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings.

Exceptions:

1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck, are exempt from the requirements of this section.
2. Installation, alteration or repairs of plumbing or mechanical systems are exempt from the requirements of this section.

R314.4 Power source.

Smoke alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection.

Exceptions:

1. Smoke alarms shall be permitted to be battery operated when installed in buildings without commercial power.

2. Hard wiring of smoke alarms in existing areas shall not be required where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for hard wiring without the removal of interior finishes.

R314.5 Interconnection.

Where more than one smoke alarm is required to be installed within an individual dwelling unit in accordance with Section R314.3, the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.

Exception: Interconnection of smoke alarms in existing areas shall not be required where alterations or repairs do not result in removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for interconnection without the removal of interior finishes.

All alarm boxes shall be painted "orange" for rough-in inspection. (Brentwood City requirement).

10. Carbon monoxide alarms shall comply with Section R315 of the 2012 International Residential Code

SECTION R315 CARBON MONOXIDE ALARMS

R315.1 Carbon monoxide alarms.

For new construction, an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages.

R315.2 Carbon monoxide detection systems.

Carbon monoxide detection systems that include carbon monoxide detectors and audible notification appliances, installed and maintained in accordance with this section for carbon monoxide alarms and NFPA 720, shall be permitted. The carbon monoxide detectors shall be listed as complying with UL 2075. Where a household carbon monoxide detection system is installed, it shall become a permanent fixture of the occupancy, owned by the homeowner and shall be monitored by an approved supervising station.

Exception: Where carbon monoxide alarms are installed meeting the requirements of Section R315.1, compliance with Section 315.2 is not required.

R315.3 Where required in existing dwellings.

Where work requiring a permit occurs in existing dwellings that have attached garages or in existing dwellings within which fuel-fired appliances exist, carbon monoxide alarms shall be provided in accordance with Section R315.1.

R315.4 Alarm requirements.

Single-station carbon monoxide alarms shall be listed as complying with UL 2034 and shall be installed in accordance with this code and the manufacturer's installation instructions.

11. All electrical wiring including low voltage shall not come in contact with water lines. Water pipe grounds shall be attached to cold water line at hot water heater. Hot and cold water lines shall be bonded together.

12. Raceways in wet locations above grade. All **conductors** in conduits in wet locations shall be approved for wet locations.
13. Tamper resistant receptacles required in **Dwelling** units.
14. Remodeling projects shall be upgraded to present day electric code standards in areas where substantial improvements are completed.
15. Outside boxes for wall lighting will be metal octagon.
16. All alarm boxes shall be painted "orange" for rough-in inspection. (Brentwood City requirement).

Commercial Requirements

1. Brentwood Requirement. 230-62 Service Equipment - is amended by adding the following provision:
Unenclosed guarded service equipment shall be limited to mandatory disconnects and metering equipment.

All other service equipment shall be placed in an enclosed area of a structure. This rule has been added to limit the electrical equipment attached to the exterior of commercial buildings, and eliminate any unsightly cluttered appearance to the structure exterior. The main disconnect and master meter are allowed to be located on the exterior of the building. It would also include individual tenant space disconnects and meters. However, it does not allow for wire-ways and other electrical equipment that is not part of disconnect or metering equipment.

2. All new services will be underground unless prior written approval has been granted by the City of Brentwood.
3. A forty-five (45) day time limit will be given with all service releases. Special authorization for extensions will be given if the inspector or authority is notified.
4. All commercial electrical and low voltage permits shall be posted at job entry (copy is acceptable).
5. Scheduling of commercial inspections shall be coordinated with the City of Brentwood Building Codes Section. (Rough-in, above ceiling, life safety and final inspection)
6. Phased Projects: Phasing of commercial projects will require permitting and inspections per phase.
7. Finished roof shall be on structure prior to rough-in inspection.
8. To obtain a service release, the electrical contractor shall request inspection and provide electrical permit number.
9. All commercial finals shall be given access to panel rooms; ladder to be provided.
10. Emergency egress lighting (emergency electrical system) shall be provided in the main electrical panel room for building(s) and public bathroom(s) servicing multiple tenants.
11. All penetration in firewalls shall be sleeved with UL listed materials.
12. Rating of walls and partitions will be stenciled above drop ceilings as to Fire Rating (1 hr.), (2 hr.), etc.
13. Raceways in wet locations above grade. All **conductors** in conduits in wet locations shall be approved for wet locations.
14. No circuits shall extend into another different tenant space.
15. For multi-occupancy structures, metering equipment shall be identified to indicate the suite or address served by a permanently attached method.
16. Services 600- amp or more shall be megged.

Low Voltage Requirements

“Security and fire alarm installers will be asked to provide a copy of their current State of Tennessee license. Licensed installers shall provide a copy of the programming UL guide attached to the inside cover of the panel equipment.”

Low-Voltage / General Information:

1. Lock off device is required for that circuit feeding a Fire Alarm Panel.
2. All LV wiring shall be eighteen (18) inches off the ceiling, if the structural ceiling will allow it.
3. A 110 volt outlet is required within twelve (12) inches of an outlet for Cable or Phone.
4. A 110 volt outlet is required at the interface box for Cable / TV/ Satellite / Security.
5. All outlets to be homerun to within two (2) feet of meter base outside.
6. All cable tails internal and external to be a minimum of twelve (12) inches in length.
7. Ground block to be attached six (6) inches below cable exit conduit.
8. Cable to be grounded by means of:
 - a. #4 split bolt attached to #6 power ground.
 - b. Conduit clamp or #1 strap attached to electric panel conduit.
 - c. Conduit clamp for attaching to ground block.
 - d. Pipe clamp or #1 strap attached to metal water pipe.
9. All cables shall be run with two (2) inch separation of line voltage and low voltage.
10. All fire-rated assembly penetrations shall be sleeved and sealed with approved materials.
11. All EMT wall stubs and the like shall have approved connectors at each end.
12. Manufacturer’s Installation Instructions shall be followed.
13. Irrigation ditches and outside lighting shall be a minimum of six (6) inches deep.

Website Links

For online access to this document, ***GUIDELINES FOR ELECTRICAL INSTALLATION***, you may visit the City of Brentwood’s Planning & Codes Department / Applications and Documents Section:

<http://www.brentwood-tn.org/planning>

A copy of the Electrical Installation Requirements from the State of Tennessee/Department of Commerce and Insurance can be obtained at: <http://www.tennessee.gov/sos/rules/0780/0780-02/0780-02.htm>

International Code Council:

www.iccsafe.org

Middle Tennessee Electric Membership Corporation:

<http://mtemc.com>

Nashville Electric Service:

www.nespower.com

National Fire Protection Association:

www.nfpa.org

*** City Requirement**